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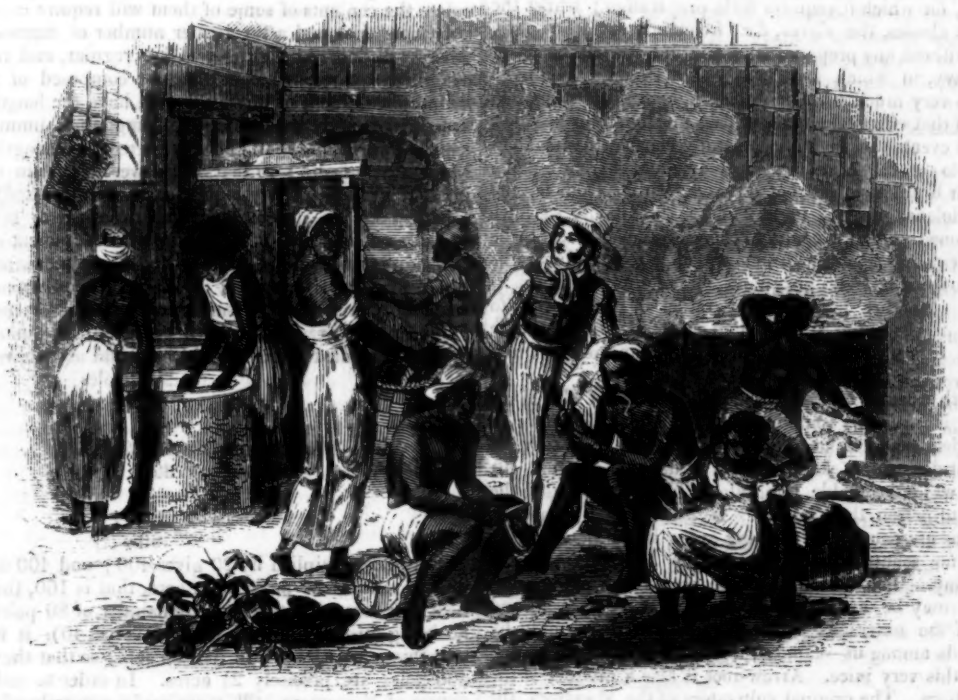
THE MANDIOCA-ROOT OF BRAZIL.



[Preparing of the Mandioca-root.—From a Sketch in 'Voyage Pittoresque dans le Brésil, par M. Rugendas.']

THE Mandioca or Cassava root is a plant of the genus Jatropha, and belonging to the natural order Euphorbiaceæ, which is grown extensively in almost every province of Brazil; and though as a plant almost entirely unknown among us, forms the chief article of food to all the poorer classes of that country. There are above twenty species; all, with but one exception, abound in a highly poisonous juice, very small doses of which will produce serious and sometimes fatal consequences. The exception we have mentioned is the species called Macaxeira, and which is perhaps the least used of any of the cultivated kinds, on account of the small size of the root: it is grown as a luxury merely. There is another species which is entirely prohibited on account of its peculiarly active poisonous qualities: this is known by the name of Manipeba. The wild or spurious kind, called Aipim, when roasted, is considered as not inferior to roasted chestnuts.

Mandioca is one of the plants originally cultivated by the aborigines or Indians of Brazil, and not only do they continue still to cultivate it, but their mode remains unaltered, and is essentially the same as that now pursued by the Brazilians generally. The same, with but slight modifications, may be said of the preparation of the root. For the growth of this plant a dry hot soil of a sandy nature appears to be considered the most suitable, which is raked up in small round hillocks (giving one the idea of mole-hills), about four feet apart. Into these hillocks cuttings of the branches of the plant, about an inch thick and seven or eight inches long, are stuck. The cuttings soon take root and put forth their leaves and buds; and in about eighteen or twenty months form plantations of trees, four or five feet high, with large branching stems, and presenting altogether very much the appearance of a grove of castor-oil trees. The foliage is now all cut away and the roots dug up, which resemble irregularly-shaped parsnips: each plant produces in good ground from six to twelve pounds of these roots. The soil must now be allowed to rest for one or two years, as it will not support annual crops. No sooner are the roots dug up but they are prepared for food, either for the cattle—which is done by simply slicing them and leaving the pieces exposed to the sun for a few hours, which draws off in exhalations all the poisonous qualities,—or for man, which requires a more lengthened and elaborate process. It is a curious property of this root that it cannot be preserved in a crude state even three days: it must therefore be immediately eaten by the cattle, or prepared in the manner shown in the engraving. The work-people, it will be seen, are all negro slaves, with the exception of the overseer, ready, whip in hand, to enforce attention and industry. The roots are first handed to the group in front of the picture, whose duty it is with a blunt knife to remove the peel. The next operation is to wash the roots very carefully, which is confided to the two females on the left. The roots are now ready for the man at the press in the corner, who with one hand turns the wheel, while with the other he presses the root against the mill-stones, between which it is drawn and reduced to pulp. After the juice has been extracted, as far as possible,

from this pulp by pressure, the latter is placed in the vessel from whence we see the steam rising so densely, and there kept continually in agitation by stirring, over a brisk and regular fire, until it becomes dry; it then assumes a granular appearance, is allowed gradually to cool, and lastly is packed in barrels, when, if kept from moisture, it will remain good for a long time. The product thus obtained is called by the Brazilians, Farinha de Poa, or stick-flour, the first part of the English appellation arising from the bits of hardened fibre found in the flour. The Mandioca-flour thus prepared is used as food in different ways. Among the higher ranks it is made into bread, for which it requires little preparation; whilst the poorer classes, the slaves, &c., frequently eat it as it is, dry, without any preparation, or mix it with boiling water or gravy, in which state it is called Piram. The meal swells very much when moistened; hence it is supposed, that if that effect take place in the stomach, injury ensues. At all events the planters generally consider it unwholesome to eat the Mandioca-meal dry, and therefore make it their business to see that the slaves do not from fatigue or indolence neglect to mix it in the manner we have mentioned. Half a pound of this substance is said to be sufficient for the daily sustenance of a man. In broths and soups it becomes gelatinous, and affords rich nourishment. Another mode of preparation of the root is to soften it by steeping it in water in covered baskets for some days; it is then called Mandioca molle, and is made into cakes, &c.

With regard to the poisonous qualities of the Mandioca, it is said by some of the older writers that the root is so deleterious as to bring on a torpidity, of which the patient dies unless kept moving or dancing, so that the plant was a vegetable tarantula. The Indians used the juice to poison their arrows. It is said that even now pigeons are caught by steeping grain in the juice, which they no sooner swallow than they lose all power to fly away. The poison must be of a very volatile kind, for it may be exhaled even from the juice by heat, and one of the nutritious articles of diet commonly used by invalids among us—tapioca, is a kind of starch deposited from this very juice. Arrow-root is also a product of the Mandioca. The original cultivators of the Mandioca, the Indians, not only managed to obtain an excellent food from it, but also a spirituous intoxicating liquor. Their very primitive mode of preparation is thus described by Southey:—

"They prepared it by a curious process, which savage man has often been ingenious enough to invent, and never cleanly enough to reject. The roots were sliced, boiled till they became soft, and set aside to cool. The young women then chewed them, after which they were returned into the vessel, which was filled with water, and once more boiled, being stirred the whole time. When this had been continued sufficiently long, the unstrained contents were poured into earthen jars of great size, which were buried up to the middle in the floor of the house; these were closely stopped, and in the course of two days fermentation took place. They had an odd superstition that if it was made by men it would be good for nothing. When the drinking day came, the women kindled fires round these jars, and served out the warm potion in half-gourds, which the men came dancing and singing to receive, and always emptied at one draught. At such times they smoked an herb which they called Petun, some in pipes of clay, some in the shell of a fruit hollowed for the purpose; or three or four dry leaves were rolled up within a larger one, as tobacco is commonly smoked in Spain: it was a hideous sight to behold them, as the smoke issued through all the holes in their cheeks, or was forced through the nostrils. While they drank, the young unmarried men danced round with rattles on their legs. They never ate at these drinking parties, nor ever desisted from drinking while one drop of liquor remained, but having exhausted all in one house, removed to the next, and so on till they had drunk out all in the town; and these meetings were commonly held once a month. In taste the liquor is said to resemble milk."*

LAND-SURVEYING.

[Continued from No. 551.]

The non-professional measurer, whether of land, boards, or sheet-iron, or any other flat surface, is generally believed to consider a square as the most simple geometrical figure to be met with; while to the experienced measurer all figures are considered equally so, though to calculate the contents of some of them will require considerably more time and a far greater number of figures than others will do. All figures that are regular, and true or complete squares, whether they be composed of wood, metal, glass, land, or anything else, have the length and breadth precisely the same,—it being quite immaterial which dimension shall be considered the length and which the breadth; so that could we be certain that a piece of ground (or anything else to be measured) were a perfect square, it would only be necessary to measure one side or dimension of it, since the measurement of any one side multiplied by itself or the same measurement, would give the true content of the figure. Suppose, for example, the side of a small square field or piece of ground to be exactly 20 poles or rods, the quantity of ground contained therein would be found as follows:—

20 poles
20

An acre = 160)400(2½
320

80
80

Here 20 multiplied by 20 gives 400; and 400 divided by the number of poles in an acre, that is 160, the quotient is 2 acres, but there is a remainder of 80 poles, and 80 being just the half of 160 (or twice 40), it follows that this remainder is just half an acre; so that the whole 400 poles are precisely 2½ acres. In order to make the nature of the square still more easily comprehended, we will suppose a square plate of glass to be exactly a yard each way, or three feet, which is the same as one yard. Now, in order to ascertain how many square feet of glass are contained in this square plate, we must, as in the previous instance, multiply the side by itself, that is 3 by 3, thus:—

3 feet
3

9 feet.

And we prove, by drawing the annexed figure, that this is correct; and it will also assist in convincing the unlearned measurer, that if the truth of this is applicable to a small square, one where each dimension is but three feet, it will equally apply to any larger square, no matter how large or extensive it may be; for by constructing the figure after the fashion of the annexed one, and dividing it either way, according to the number of feet, yards, or poles, contained in one dimension,—on calculation it would be found to contain the same number of parts as the side multiplied by itself.

1	2	3
4	5	6
7	8	9

Next to the square, probably the most simple figure is that known under the various names of the parallelogram, oblong, or long square; a figure that, although its length is greater than its breadth (hence the name of long square), the length and breadth being equal in every part of the figure, in finding the contents of it it is only necessary to measure one side and one end; and these two dimensions multiplied together produce the content of the whole,

* Southey's 'History of Brazil,' vol. i., p. 233.

whether the calculation be made in inches, feet, yards, poles, or chains. Indeed it is as common and nearly as simple a figure as the square, but it has two dimensions instead of one. Any common board, the breadth of which is everywhere equal, is an oblong, or figure of this sort; and the window near which we are writing is another specimen, but the breadth in this case is much greater in proportion to the length than is the case with boards in general. Suppose a plank, a pretty wide one, to be two feet in breadth, and the length twelve feet and a half, the contents will be $12\frac{1}{2} \times 2 = 25$ feet, or thus:—

$12\frac{1}{2}$
2
—
24
1=two halves.
—
25 total content.

To prove that this is correct, here is the figure, for there

1	1	2	3	4	5	6	7	8	9	10	11	12
2	13	14	15	16	17	18	19	20	21	22	23	24

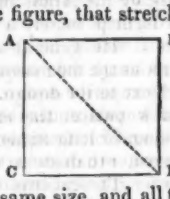
are 24 whole divisions or parts, and two half-divisions, which are equal to a whole one, altogether amounting to 25.

In reference to the window which we spoke of, the height—which is the longer dimension, and may therefore be called the length—is 5 feet, and the width, which is the breadth, is $3\frac{1}{2}$ feet; the quantity of glass it therefore contains, without making any allowance for the framework in which the panes are set, would be $5 \times 3\frac{1}{2} = 17\frac{1}{2}$ feet; the operation would stand thus:—

5 feet.
$3\frac{1}{2}$
—
15
$2\frac{1}{2}$ (or the half of 5)
—
$17\frac{1}{2}$ total content.

It seems unnecessary to introduce another figure in order to represent the window; it would require to be constructed of 5 small squares in length, and $3\frac{1}{2}$ squares in breadth.

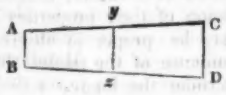
We are well aware that many persons of inferior education, the moment they meet with any geometrical or mathematical figure (and all figures or diagrams connected with and elucidating measurements in general are of this sort), take the alarm, and never attempt to bestow the least attention upon it, apparently taking it for granted that it would be useless their doing so, inasmuch as it would be impossible for them to comprehend the meaning of the writer. But this would be carrying a diffidence and distrust of their own capabilities to a foolish extreme, for in many cases the nature, if not the properties, of simple figures may be so clearly explained, that persons who are capable of reading the explanation, and at the same time eager to comprehend it, will seldom be disappointed or foiled in their attempts. For who is there that is so stupid as not to comprehend that the dotted line drawn through the annexed square figure, that stretches from corner to corner, or from A to C, must divide the figure ABCD into two equal parts, for if the figure were a piece of paper, or a piece of board, when divided along the said dotted line, and one part turned back upon the other part,



they would be found exactly of the same size, and all the outlines or edges of the one exactly corresponding with the outlines or edges of the other.

Hereafter we shall find occasion to speak of trigons, or triangles (three-sided figures), and it may here be observed that the dotted line AD divides the annexed square into two equal triangles; and further, that not only regular squares, but oblongs or long squares are divided into two equal parts or triangles by simply drawing lines across them from the opposite corners or angles, as in the square already alluded to. All the figures are drawn to a scale of 20 rods to the inch.

One of the shapes or figures most commonly met with in measuring land is of the oblong or long square description, but it frequently happens that such figures are not quite regular in their form, that is, one side may be a little longer than the other, or one end may be broader than the other, in which case, multiplying the length of one of the sides by the breadth of one of the ends could not possibly give the true content. Now in the annexed figure, A, *y*, C, B, *z*, D, one end (AB) is wider than the other end (CD), but the sides are of an equal length. Let the length be 20 rods, and the breadth of the greater end 6 rods, and of the less end 4 rods. Then to find the true content it will not do to multiply the length (20) by either 4 or 6, as one would give too little and the other too much; but we must multiply the length by the breadth that the figure is in the middle, that is, at a point equally distant from either end; and in order to ascertain that breadth we have only to add the two ends together and divide by 2; thus, 6 added to 4 makes 10, and 10 divided by 2 gives 5, which would be found to be the exact distance across from *y* to *z*, were that distance accurately measured. But if the sides AC and BD slope much, this plan will not be found sufficiently accurate, for an oblique or sloping line is always longer than the centre of the body of the figure; but in ordinary practice, such as we anticipate ploughmen and farmers engaged in, the plan here adopted will generally be found sufficiently near the truth. Then the calculation of the contents would stand thus:—



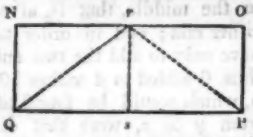
20
5, or the half of 10
—
4,0)10,0
—
2 roods 20 poles,

that is, $20 \times 5 = 100$; and 100 divided by 40 (40 rods making a rood) gives 2 roods and 20 poles, or half an acre, and 20 poles or half a rood over, 20 poles being the eighth part of an acre. In the like manner a carpenter would calculate the content of a board which measured more inches across one end than across the other; for, having first ascertained its length by applying his foot-rule or some other scale to it, he then would measure the breadth at either end, add these two breadths together, and divide by 2 to find a mean or medium breadth, and afterwards multiply the length and mean breadth together in order to find the true content.

In order to carry out the view we had in endeavouring to convince the uninitiated, that there is little difficulty or perplexity to be apprehended in measuring plain and regular-shaped figures, we do not think that we ought to stop at the point which we have already reached; but in making a still further advance in the common practice of measuring pieces of land, we would again caution the reader against his allowing a diffidence or distrust in his abilities to prevent his bestowing a very moderate degree of attention upon this subject; for we honestly assure him that it neither requires a long head nor a scientific knowledge in order to comprehend the meaning of what we further purpose placing before him.

One of the commonest, most simple, and generally useful figures is that of the trigon or triangle, a figure varying exceedingly in shape, but in every variety of form it is contained under three sides or bounding lines. When we draw or construct a mathematical

figure or diagram upon paper, we are in the habit of calling the lowest or bottom line, that upon which it appears to stand, its base, while in triangles the two remaining lines of which the figure is formed are denominated the sides or legs. But a triangle may be drawn or placed any side up, without altering the character or properties of the figure, though one of the sides should be made the bottom or base. It has already been shown, that if a line were drawn from opposite corners or angles of a square, that such a line would divide the square into two triangles,—not only similar in shape, and contained under lines of a corresponding length, but their contents would be exactly equal the one to the other also. Without attempting to make the reader acquainted (our limits not allowing it) with even the titles commonly bestowed upon the various classes of triangles, much less entering upon an explanation of their properties and geometrical principles, it may be proper to observe, as a general rule for the guidance of the reader, that in all cases, if we make or consider the longest side of the triangle the base, the content or area of such figure will invariably be exactly the one-half of the content of an oblong or long square of the same length as the said base or bottom side and of the same breadth as the triangle. In the annexed oblong figure, marked N, *r*, O, P, *s*, Q, the triangle contained under the three lines Q, *r*, P is exactly half the size of the entire figure; for if it be examined it will be found that the half of the whole triangle,



or the part Q, *r*, *s*, is equal to the part of the whole oblong N, *r*, Q, or to a fourth part of the whole oblong; and as the part of the triangle, namely *r*, P, *s*, is equal to the part of the whole figure *r*, O, P, so the two parts of the triangle, namely *r*, *s*, Q, and *r*, P, *s*, are equal to the two parts of the oblong, namely *r*, N, Q, and *r*, O, P; so that it follows that the whole triangle Q, *r*, P, is equal to half the whole oblong N, *r*, O, P, *s*, Q. In the triangle Q, *r*, P, the dotted line *s*, *r* is called the perpendicular, and is in reality the breadth; and as the base, P, Q, is equal to 40 (agreeably to the scale from which it is drawn), and the perpendicular 15 (upon the same scale), the content of the triangle would be 40×15, and divided by 2, or 600 divided by 2, or 300. And as the length and breadth of the oblong, of which the triangle forms the half, are precisely the same as the base and perpendicular of the triangle, the content of the whole figure—that is, the length multiplied by the breadth—is 600, that is, 40×15, or just double the area of the triangle.'

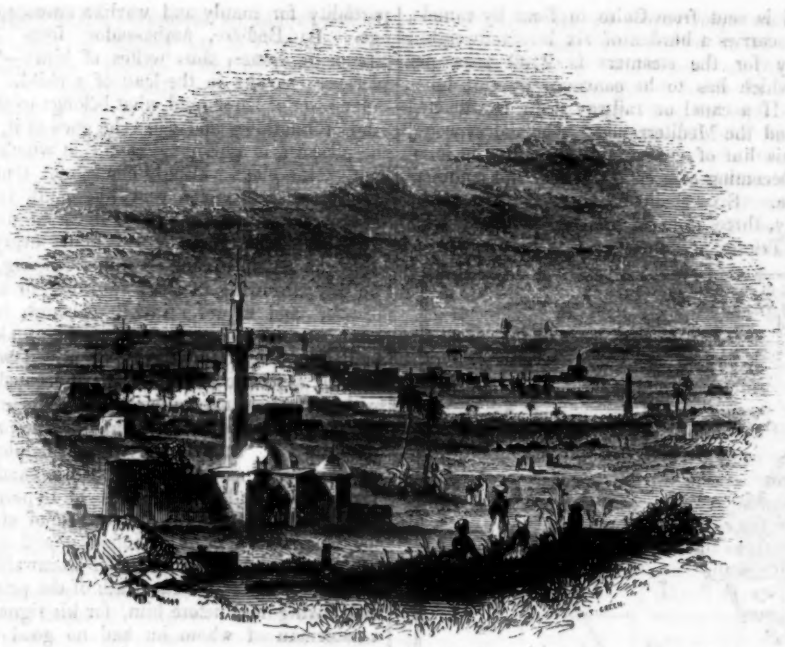
[To be continued.]

ALEXANDRIA.

ANCIENT Alexandria, once the rival of Rome, and, as the emporium of the eastern and western world, a city of more extensive commerce than Tyre had ever been, was built by direction of Alexander the Great, during his visit to Egypt, about 332 years before the Christian æra. He intended it to have been the capital of his vast empire, and having opened the eastern world to commercial enterprise by his conquests, Alexandria, profiting by its position and political circumstances, rapidly rose into importance. It became the seat of the Ptolemies, the centre of learning and knowledge, and the great resort of commerce. In the year 30 before the Christian æra, Alexandria fell into the hands of the Romans, under whom it continued a flourishing city; and it afterwards formed a part of the Lower Empire. In the year 640, Egypt was conquered by the Arabs under Omar, and in 969 the Fatimite caliphs made themselves masters of the country. Alexandria had been declining ever since the Arab conquest, and the caliphs having built New Cairo and made it their capital, its importance was still further diminished. The discovery of the passage to India by the Cape of Good Hope, in 1497, effected a revolution in commerce by which Alexandria also suffered. The modern city, called Iskanderieh by the Arabs, is now the second city of Egypt, and the only seaport of any importance which it possesses. Mehemet Ali, the viceroy of Egypt, who has usurped the sovereign authority in the country, has made Alexandria the station of his fleet, and has established a naval arsenal, government warehouses, and other public establishments there. It is frequently the seat of his government, and some of his principal ministers are always resident at Alexandria.

Alexandria was embellished by the Ptolemies with works of art collected from the ancient cities of Egypt. It contained also the tomb of its founder; but of the numerous monuments of its former magnificence few remain at the present day. Only one of the two granite obelisks called Cleopatra's Needles is now standing. Its height is seventy-nine feet. The column usually called Pompey's Column stands on a mound of earth about forty feet high. Its height is ninety-four feet, including the capital, base, and pedestal, and the shaft, which consists of one entire piece of red granite, weighing at least two hundred and seventy-six tons, is about sixty-seven feet long. It was erected in honour of the emperor Diocletian, though probably not for the first time. A description of this column will be found in No. 130 of the 'Penny Magazine.' There were a number of other colossal pillars within the city. The great temple of Serapis, destroyed by the patriarch Theophilus, with the sanction of the emperor Theodosius, was at Alexandria. It was situated in the Rhacotis (marked R in the accompanying plan). The principal street of the ancient city was thirty stadia (about 2¾ miles) in length, and ran in a direction calculated to give it the benefit of ventilation by the northern winds. The island of Pharos, on which a magnificent lighthouse was erected, said to have been four hundred feet high, was connected with the mainland by a dyke called the Hepastadium. The palaces of the Ptolemies, the museum, and various temples were situated between the obelisks and Lochias, which space, with that extending towards the eastern gate (marked C), was the residence of the court and higher classes. Besides the Great Port, there was another called the Eunostus, which contained a smaller port, the entrance of which could be completely closed: no traces of it now remain. The port Eunostus and the Mareotic Lake were united by a canal; and there was a canal from the lake to Canopus, where it communicated with the western branch of the Nile. The city was supplied with river-water by means of this canal; and it was conveyed to private houses by subterranean aqueducts. Many of the ancient cisterns for keeping the Nile water are in good preservation, and the number of them in use during the French occupation was above two hundred. They form vaulted chambers coated with a thick red plaster impermeable to water, and are supported by columns which form arcades of two or three stories.

The materials of ancient Alexandria have been extensively employed in the modern city, which was built chiefly by the Arabs on the artificial neck of land which once formed merely a communication with the ancient Pharos. Its general appearance is not very striking; and although the mosques are numerous, none of them are of very superior design. Among the public buildings are the new palace, the arsenal and dockyard, the custom-house, and fortifications. The streets are narrow, and, being unpaved, are dusty in summer and in a muddy state in winter. The cisterns which supply the inhabitants with water are filled partly by the winter rains, and part of the supply is derived from the canal of Mahmoudieh. The government of Mehemet Pasha has instituted a "Commission of Ornament" for the purpose of improving the



[View of Alexandria.]

cleanliness, health, and appearance of the city. It takes measures for obtaining a free circulation of air in the streets and in private houses, and no new building can be erected without the sanction of the Board, which consists of some of the principal officers of the government and the European consuls. The Board is authorised to prevent all nuisances, and the removal of all the cemeteries beyond the walls of the city has been effected by its orders.

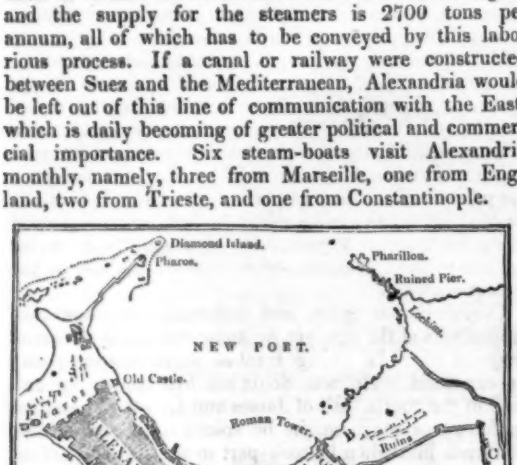
At the time of the French evacuation of Alexandria, in 1801, the population was estimated at about 7000; but according to Dr. Bowring ('Report on Egypt and Candia'), Alexandria contains 60,000 inhabitants, of whom 8000 are military and naval troops in the service of the Pasha, and 3000 are artisans employed in the dockyard. The bazars swarm with motley groups of Turks, Egyptians, Arabs, Greeks, Jews, and Franks of various nations.

Though not the seat of government, the situation of Alexandria is so much superior to that of Cairo for purposes of trade, that it may be considered the commercial capital, while Cairo is the political capital. Alexandria is in fact the only port of Egypt; Damietta and Rosetta being very imperfect outlets for the produce brought by the Nile. All the products intended for foreign export are conveyed by this channel to Alexandria, where it can at once be shipped for foreign markets. The Mahmoudieh canal, which was restored and completed by Mehemet Ali in 1819, joins the Nile at Atfeh, about forty miles distant from Alexandria. Here goods and passengers from or to the latter place are transferred to other boats, though there are sluices by which transhipment might be avoided, but they are seldom used. Before the canal was reconstructed the produce of the interior was brought to Alexandria by Rosetta, where the mouth of the Nile was sometimes impassable for a couple of months in winter. An account of this canal is given in No. 452 of the 'Penny Magazine.' The traffic between Alexandria and Cairo, a distance of about one hundred miles in a direct line, is by this canal and the Nile; but it is often attended with tedious delays. Boats are not always to be obtained at Atfeh, as orders from the Pasha may have caused them to be taken for the public service. The Nile is also exposed to sudden squalls; and the general direction of the winds is exactly contrary to the current; and though the Arabs are good boatmen, the passage sometimes occupies a fortnight. As might be expected in a country in which improvements, instead of being developed by internal wants, have been forced into existence by the energy of one individual, there is a want of natural order in the changes which Mehemet Ali has introduced. Thus he has a line of telegraphs between Alexandria and Cairo, while there is not a road calculated to facilitate and encourage traffic. The daily post between Cairo and Alexandria conveys letters in from thirty to thirty-six hours, but it is chiefly for the use of the government, and the merchants are under the necessity of establishing a post of their own, which is expedited three times a week.

The exports of Egypt, which are almost wholly shipped at Alexandria, consist of the following articles, enumerated in the order of their value:—Cotton-wool, gums, rice, linen, skins, incense, flax, cotton-twist, corn, linseed, elephants' teeth, senna, saffron, and tortoise-shell; but one-fifth of the articles exported being classed as 'sundries' in Dr. Bowring's Report, we are unable to designate them. In 1831 the greatest amount of exports was to Turkey, and next came Austria, Great Britain, Tuscany, and France. Since 1831 the trade with England has been increasing, and that with Turkey and Tuscany has declined. In 1831 the imports were largest from Turkey, Austria, and Tuscany; after which came England and France. A fourth of the imports are not classed under separate heads, but the following are the other principal imports in the order of quantity and value:—Wood, cotton goods, silk goods, iron, tarboushes, hardware and cutlery, paper, sugar, wine, and spirits. The number of vessels which entered the port was 523 in 1837, and the number of departures was 379: of the latter, 32 were for England, all for Liverpool, with one exception; and of the former, 11 were from London, 10 from Liverpool, and 28 from Newcastle.

Alexandria is at present an important station in the line of communication with our Indian possessions. The mail from Falmouth has been landed at Alexandria in less than fourteen days, and it is then dispatched by the Mahmoudieh canal, the Nile, and by Cairo to Suez, when it is conveyed by the Red Sea to

Bombay. Coal is sent from Cairo to Suez by camels, each of which carries a burden of six hundredweight; and the supply for the steamers is 2700 tons per annum, all of which has to be conveyed by this laborious process. If a canal or railway were constructed between Suez and the Mediterranean, Alexandria would be left out of this line of communication with the East, which is daily becoming of greater political and commercial importance. Six steam-boats visit Alexandria monthly, namely, three from Marseille, one from England, two from Trieste, and one from Constantinople.



[Plan of Ancient and Modern Alexandria.]

HORSE ARMOURY IN THE TOWER.—XV.

HENRY, PRINCE OF WALES, 1612; GEORGE VILLIERS, DUKE OF BUCKINGHAM, 1618; CHARLES, PRINCE OF WALES, 1620.

HENRY, PRINCE OF WALES. The armour to which the name of this prince is affixed is a fine tilting-suit, elaborately engraved with warlike subjects, richly gilt. There is every probability of its being one of the suits actually worn by him in some of those tilting-matches in which he so much delighted, and which the visits of several foreigners of distinction, during his father's reign, gave him opportunities of getting up with great splendour.

The untimely death of this young man, whose conduct in the high station which he occupied promised so much for the welfare of the kingdom when he should be called upon to assume its government, gave a heavy blow to the expectations of the people, by whom he had been almost idolised. Even at the present day, after the lapse of more than two centuries, we cannot help feeling a mournful interest in the fate of one who, heir-apparent to so much greatness, lived long enough to show himself deserving of all the honours that he seemed born to, but not long enough to enjoy them.

Henry was the eldest son of James I., and was born in Sterling Castle, Scotland, February 19, 1594. He was committed to the care of the Dowager Countess of Mar, and, when six years of age, removed to the custody of Adam Newton, a learned Scotsman, from whom, however, he does not appear to have imbibed any very great relish for learning; but we are informed that at a very early age the natural greatness of his character made itself apparent, that he manifested on several occasions a great degree of courage and fortitude, and evinced a partiality for manly and warlike amusements above his age. La Bodière, ambassador from Henri IV. of France to James, thus writes of him:—"None of his pleasures savour in the least of a child. He is a particular lover of horses and what belongs to them, but is not fond of hunting; and when he goes to it, it is rather for the pleasure of galloping than that which the dogs give him. He plays wittingly enough at tennis, and at another Scottish diversion very like mall, but always with persons older than himself, as if he despised those of his own age. He studies for two hours every day, and employs the rest in tossing the pike, leaping, shooting with the bow, throwing the bar, vaulting, or some other such exercise, and is never idle." Though he only studied two hours every day, he contrived to make himself well acquainted with most things connected with the government of a great country, which it seemed probable that in the course of nature he would soon be called upon to superintend. His conduct was regulated not so much by the usages of society as by the principles of right and wrong which his religion taught him, and which his abhorrence of the least approach to hypocrisy led him to practise. Such was his intense love of sincerity, that he could not endure even the innocent and usual fallacies of polite intercourse. Sir Charles Cornwallis, whose book appeared shortly after the death of the prince, informs us, that having laid before him, for his signature, a letter to a nobleman of whom he had no good opinion, which ended with some common-place expression of favour, the prince commanded him to make another copy, the concluding words of which he dictated himself, saying that his hand should never affirm what his heart did not feel. His temper was naturally very haughty, but the mildness of his disposition and the excellence of his understanding taught him the necessity of curbing it, and it was rather from a degree of constraint in his manner, which he could not entirely overcome, than from any word or action, that such a characteristic could be inferred. He was kind and faithful to his dependants, and supported their interests with a zeal which seldom failed of success. At the time he was created Prince of Wales, which was on the 4th of June, 1610, when he was in his sixteenth year, he had acquired such habits of prudence and economy, sweetened however by a liberal disposition, that his household (which consisted of more than six hundred persons) was regulated with a preciseness which offered a great contrast to the government of his father's court; and by which he was enabled so to rule his expenses, that they were always within his income, a degree of prudence for which it would be difficult to find a parallel in the history of princes. He had chosen as patterns for his conduct the good qualities of Henry V. and Edward the Black Prince, whose warlike dispositions and open and ingenuous minds he greatly admired; but, unlike some who have chosen similar examples for the regulation of their conduct, he did not choose to imitate anything that should be censurable in their actions. As he approached to manhood, he had made himself master theoretically of the art of war; and may be said in some degree to have practised it, as he could execute in the field the manœuvres he had learned in his study, could perform all the duties of a common soldier, was well versed in all warlike amusements, and would frequently walk fast and far to accustom himself to long marches. He was also critically versed in all that related to the navy, even to the most minute circumstances of ship-building, and never failed to make himself acquainted with and to patronise all new inventions or discoveries likely to be of utility to the military or naval service. But in the arts of peace he took scarcely less interest, the professors of sculpture, architecture, carving, painting, &c. looking up to him as their protector. Music he himself practised with success.

His discretion, temperance, economy, and the wisdom displayed by him in the conduct of his own affairs, pro-

mised so much when he should succeed to the throne, that no heir-apparent was ever perhaps so popular. These good qualities, however, "acting (as one of our historians observes) with the effect of satire and reproach on the contrary disposition of the king," induced a degree of jealousy in the breast of that monarch, which would occasionally break out in some testy expression.

The court of the young prince was well attended, and with people of so different a class from those who frequented the court of the king, that James had exclaimed, "Will he bury me alive?" a question which he scarcely thought figurative. But whatever suspicions James may have entertained with respect to the growing popularity of his son, his fears and the people's hopes both suddenly received a check which seems never to have been contemplated by any but Prince Henry himself. This was the illness of the prince, which, occasioned at first by the fatigue of hard travelling in attending one of his father's progresses, quickly assumed a serious character, and in a short time put an end to his life, while his physicians were debating whether he should or should not be bled, a question which, at the present day, would never be raised in a case of serious fever such as that under which the prince was suffering. At the conclusion of the account of his death, in the 'Pictorial History of England,' as collected from various sources, the following details are given:—"His head frequently wandered, but on the night of the 2nd of November his delirium increased alarmingly: he called for his clothes, for his armour and sword, saying he must be gone. On Thursday, the 5th of November, the anniversary of the gunpowder plot, the king was informed that there was no hope. Upon this, James, who had visited him several times at St. James's, 'being unwilling and unable to stay so near the gates of sorrow, removed to Theobalds in Hertfordshire, to wait there the event.' Abbot, the archbishop of Canterbury, attended the prince, told him of his danger, and took his confession of faith. In the course of that day the prince repeatedly called out 'David!—David!' meaning Sir David Murray, his confidential friend and servant; but when Murray stood by his bedside, he always answered with a sigh, 'I would say something, but I cannot utter it.' During that night he made many efforts to speak on some secret matter which seemed to press heavily on his heart, but he could not be understood by reason of the rattling in his throat. Sir David Murray, however, contrived to understand his earnest wish, that a number of letters in a certain cabinet in his closet should be burnt. It is said that these letters were burnt accordingly. . . But the sufferer was now past cure and help, and he expired at eight o'clock that night, being Friday the 6th of November, 1612. He was eighteen years, eight months, and seventeen days old." Sir Charles Cornwallis has given the following sketch of his person:—"He was of a comely, tall, middle stature, about five feet eight inches high: of a strong, straight, well-made body, as if nature in him had showed all her cunning; with somewhat broad shoulders, and a small waste; of an amiable majestic countenance, his hair of an auburn colour, long face and broad forehead; a piercing grave eye, a most gracious smile, with a terrible frown."

Though we would fain imagine that, had he lived, the principles he had advocated as a prince would have been supported by him when king, the instances are so rare in which a perfect consistency of character has been maintained through life, that it may be doubted whether, when called to a higher sphere of action, and obliged to pay great deference to conflicting interests, he would not have been in some danger of losing his prudence, his mildness of disposition, his love of sincerity, and other virtues for which we now honour him. It should be remembered also that he had a considerable share of that pride and obstinacy which led others of his family, before and after him, into so many ruinous errors.

George Villiers, Duke of Buckingham, 1618. Of this unworthy but fortunate favourite, and not the less fortunate that his death was such as to excite commiseration for a man who otherwise would have gone to his grave amid the curses of the people, we need not say much. The power he obtained over the mind of James I., the favour he enjoyed then and afterwards from his son Charles, and the almost unprecedented accessions made to his rank and fortunes, without any mental qualifications to excuse them, and indeed indebted for them only to a fine person and a graceful address, combined with the personal accomplishments which he had acquired during a long residence in France, have rendered his name too familiar to need a lengthened account of his life on the present occasion.

Though he was brave, and understood all the warlike amusements of the age, yet he knew nothing of the art of war, and when he engaged in it, proved his incapacity for command. He was doubtless first among the gallants of the courts both of James and Charles I., and the qualifications which might be spared in the minister sat well upon him when he took part in the festivities of the court.

The romantic expedition which he undertook into Spain, in company with Prince Charles, has been attributed to his jealousy of the earl of Bristol, who was then conducting the negociation with reference to the marriage of the Prince with the Infanta. Of this expedition we shall shortly give some account, and till then take leave of his grace of Buckingham.

Charles, Prince of Wales, 1620. Charles, the second son of James, was born at Dunfermline in Scotland, November 19, 1600. His early childhood was sickly, and he was afflicted with so much bodily weakness, that his limbs performed their functions with difficulty. The care of his infancy was entrusted to the lady of Sir Robert Cary, and at six years of age he was placed under the tuition of James Murray, a Scot of extensive erudition. As he could not take part in any active exercises, he naturally devoted much of his time to study, and acquired rapidly a considerable knowledge of the learned languages. As he grew up, his weakness left him, and at the time he was created Prince of Wales, in 1616, he was in full possession of health and strength, and excelled in the bodily exercises by which young noblemen then amused themselves. It has been mentioned particularly that he was the best marksman and the best rider of the day. He passed his youth in the amusements of the court, taking little part in politics, nor interfering in the events of that caballing period, until his twenty-third year, when, on the occasion of his projected marriage with the Infanta, he listened to the advice of Buckingham, and "with more than Spanish gallantry, but less than Spanish prudence," determined to visit his intended bride without letting the world know of his intention.

Having, with some difficulty, obtained his father's leave, he left the court privately on the 17th of September, for Newhall in Essex, the seat of the marquis of Buckingham. Then, having provided themselves with disguises, with false hair and beards, they took their departure the next day, accompanied only by Sir Richard Graham, Sir Francis Cottington, and Endymion Porter.

The prince assumed the name of John Smith, and Buckingham that of Thomas Smith, and with these travelling names they thought to escape detection, but their bearing and liberality almost discovered them in more than a single instance. On ferrying over the river near Gravesend, they found themselves without silver; and the piece of gold, worth twenty-two shillings, which they presented the boatman with, created so much suspicion, that he, feeling a misgiving as to their quality, and thinking them gentlemen going beyond sea to settle some quarrel, gave information to the officers of the town, who sent orders to stop them at Rochester. They had passed through

that city, however, before the intelligence arrived; but on the brow of the hill they encountered the French ambassador, well attended, and in one of the royal carriages. This difficulty they escaped by quitting the high road, and "teaching their post-horses to leap hedges." By this time the mayor of Canterbury had received information, and he sturdily detained them till the marquis thought it best to dismask his beard, and so told him that "he was going covertly to take a secret view, being admiral, of the forwardness of his majesty's fleet, which was then in preparation on the narrow seas." Having experienced some few more interruptions of a similar character, which, however, they contrived to free themselves from, they at length arrived at Paris on their way to Madrid. At Paris they got admission to the palace as strangers, and saw there the king in his gallery after dinner, as well as the princess Henrietta Maria, and the ladies of the court at a masque in the evening.

They only made a stay of one day, continuing their journey with the greatest celerity. They had hitherto experienced only trifling interruptions to their journey, but at Bayonne, the last town on the frontier adjoining Spain, they were subjected to a rigorous examination by the governor, who suspected they were not the 'Smiths' they represented themselves to be, and it was with great difficulty they got permission to proceed. They had not left the town many hours when a courier arrived on his road to Madrid, bearing dispatches from the Spanish ambassador in London to his government, informing them of the departure of the prince, and the supposed object of their journey. At the close of the evening of that day, two mules stopped at the earl of Bristol's house in Madrid. The riders alighted. Mr. Thomas Smith went in first with a portmanteau under his arm; and then Mr. John Smith, who stayed awhile on the other side of the street in the dark, having charge of the mules, was sent for. When the diplomatist recognised in this John Smith the heir to the English crown, and in Tom Smith the Marquis of Buckingham, he stared as if he had seen two ghosts; but presently he took the prince up to his bed-chamber, where he wrote a letter, and dispatched it by a courier that night to inform the king of England how his son, in less than sixteen days, had arrived safely at the capital of Spain.

The visit was announced privately the next day to the king of Spain, who immediately sent his favourite, D'Olivares, to welcome the prince; and at ten o'clock at night the king himself arrived in his carriage to pay him a visit. The news soon spread that the Prince of Wales had come to Spain privately to pay his addresses to the Infanta in person; and the gallantry of the act, according so well with the romantic disposition of the people, was applauded to the skies. The crowd was so great the next day around the Earl of Bristol's house in order to see the prince, that the latter was frightened to ride out; so dressing up one of the earl's gentlemen to represent the prince, they sent him out in the carriage, which the people crowded after. Mr. John Smith, the real prince, then entered a private carriage with the Earl of Bristol and two other gentlemen, and drove to the Prado, where they stayed till the king came to take the air. His majesty was accompanied by the queen, his two brothers, and the Infanta, who wore a blue riband on her arm, of purpose (says Howell, in his 'Letters from Spain,' written at the time) that the prince might distinguish her. As soon as the Infanta saw the prince, her colour rose very high, "which we hold to be (says the same authority) an impress of love and affection, for the face is oftentimes the true index of the heart." "The people here (he continues) do mightilie magnifie the gallantry of the journey, and cry out that he deserved to have the Infanta thrown into his arms the first night he came." The prince was provided with attendants by the king of Spain, and as soon as apartments could be prepared for him in the palace, he was accommodated there with great splendour. Many noblemen also arrived from England, and attaching themselves to the prince, he soon saw himself surrounded by as gay a court as that he had in England.

Fêtes and all manner of sports were provided, and Madrid became so gay that it seemed to the sober Spaniards as though they were transported to another country. As the prince excelled in all manly exercises, he maintained the high place in the opinion of the Infanta which his presence had excited, and it is recorded that being invited to run at the ring, when his fair mistress was a spectator of the sport, he did, "to the glory of his fortune and the great contentment of himself and the lookers-on, take the ring at the very first course."

But notwithstanding the Infanta expressed her attachment, and the prince was no way behind the other gallantry of this gay period, such was the strictness of Spanish etiquette that the lovers found it impossible to hold any converse except in public and in the presence of the king. That the prince did not neglect any opportunity to press his suit with the Infanta, the following passage from Howell may sufficiently prove:—

"Not long since the prince, understanding that the Infanta was used to go some mornings to the Casa de Campo, a summer-house the king hath t'other side the river, to gather May-dew, he did rise betimes and went thither, taking your brother (Endymion Porter) with him. They were let into the house and into the garden, but the Infanta was in the orchard, and there being a high partition wall between, and the door double-bolted, the prince got on the top of the wall, and sprung down a great height, and so made towards her; but she spying him first of all the rest, gave a shriek and ran back; the old marquis that was then her guardian came towards the prince, and fell on his knees, conjuring his highness to retire, in regard he hazarded his head if he admitted any to her company; so the door was opened, and he came out under that wall over which he had got in."

Charles remained in Spain seven months, being splendidly entertained during the whole period; and when at last he took his departure, he was accompanied by the king as far as the Escurial (in which palace a collation had been prepared for him and his suite, in character with the magnificence of the place); and by Gondemar, several of the principal ministers and grandees, and a long train of courtiers, as far as the sea-side.

His father did not live long after his return, and on the 27th of March, 1625, Charles ascended the throne.

As we shall have shortly to speak of him as king, we shall now close this rather long article.

Influence of the Seasons on Health.—The seasons, which exercise such a striking influence upon the vegetable kingdom, influence the diseases of the human race. The reduction of temperature alone, when the atmosphere reaches the freezing-point, is fatal to a certain number of persons; at the same time many artisans are thrown out of employment, the small earnings of the poorer classes are diminished, and, as fuel is dear, the air, to exclude the cold, is shut out of their dwellings, until it becomes highly insalubrious. Warm weather creates a demand for labour out of doors, and excites all the functions when it is not carried to excess. As the temperature advances, and autumn comes on, dead vegetable and animal matter undergoes rapid decomposition; the living are infected; and, where the miasmata are concentrated in cities, or in undrained lands, remittant fevers, dysenteries, plagues, and malignant maladies are generated. —*Mr. Farr's Letter to the Registrar-General.*

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